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ABSTRACT

In 1995, Prince George's Community College made at-risk student retention an institutional priority. Studies conducted that year found that 70% of new students tested for placement needed remediation in at least one area, and that the pass rate in developmental mathematics was approximately 50%. A two-part intervention program was initiated to help at-risk developmental math students and improve pass rates. Each developmental math instructor was paired with a counselor. At-risk students met with designated instructors and counselors to devise strategies for academic success. In addition, a series of workshops requiring student participation and group work were planned to encourage learning. Topics included time management and goal setting, math anxiety, test-taking skills, using a calculator, memory aids, and note-taking and study skills for math. Not only did the students benefit, with pass rates in each target group improving significantly, but faculty also learned a great deal about math study skills. This allowed the faculty to improve their methodologies and broaden their approaches to student learning. Faculty and administrators credited attention to the behavioral/affective dimension of student learning as the primary reason for the program's success.(YKH)

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Study Skills Can Make a Major Difference

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Study Skills Can Make a Major Difference

by Dr. Yvonne Seon and Roxann King

Presented at the 23rd Annual Conference of the American Mathematical Association of Two-Year Colleges in Atlanta, GA, on November 13, 1997.

At Prince George's Community College in Largo, MD, special workshops were developed to help at-risk developmental math students and improve the pass rates in those courses. The results were impressive. The pass rates in all of the target groups improved significantly. We believe that the reason for the success of the program was attention to the behavioral/affective dimension of student learning.

Background. By spring of 1995 it had become obvious to our developmental mathematics faculty that many of our students lacked the skills to be successful math learners in a college environment. While the overall pass rate for developmental mathematics hovered around 50%, there were great variations between performance of evening students and daytime students. Daytime Monday-Wednesday-Friday sections of these courses had pass rates of about 30-35%, with very large enrollments. Tuesday-Thursday sections had pass rates of about 50%, with much lighter enrollment. Evening classes had pass rates of about 70%, with moderate enrollments. The pass rates for Monday-Wednesday-Friday sections were decreasing over a three-year period starting in 1993.

The typical student at Prince George's Community College is a twenty-eight year old minority student enrolled part-time and employed part-time. During recent fall semesters about half of the first-time credit students were students who had just finished high school. Slightly more than one fourth had been out of school for five years or more. Although enrollment is open, matriculating students are required to take placement tests in English, reading and mathematics.

In fall 1995, 70% of the new students that were tested needed remediation in at least one area. Sixty-one percent of these students required from one to four semesters of mathematics remediation at or below the level of elementary algebra. Sixty-seven percent of the 1995 county high school graduates required remediation, 53% in math. Of the 1990 entering freshmen, only 14% were able to finish their required developmental mathematics within four years.

In fall 1995 the average pass rate for college courses was 75%. In developmental mathematics, basic arithmetic, pre-algebra, and the first semester of elementary algebra had pass rates of 48%, 44%, and 47% respectively. In these courses, students taking Monday-Wednesday-Friday daytime classes had pass rates of only 33%, 34% and 28% respectively.

In the Monday-Wednesday-Friday daytime classes more of the students were recent high school graduates, many of whom were also enrolled in other developmental courses. A significant amount of disruptive behavior occurred in our Monday-Wednesday-Friday daytime classes. This was not characteristic of other classes at the college. The math preparation of the Monday-Wednesday-Friday daytime students matched that of their evening counterparts. However, many of the former group lacked well-defined goals and the study skills necessary for success.

History of the Project. In 1995 the college had focused on the retention of at-risk students as an institutional priority. In August the counseling and advising staff and the developmental mathematics faculty initiated a two-part intervention program to help these developmental mathematics students. Each developmental math instructor was to be paired with a counselor. At-risk students were to meet with their instructors and these counselors to devise strategies for success. In addition a series of workshops was planned to support student learning in mathematics.

The campus already had two models for the workshops. One was a course on *Becoming a Master Student*, which was having observable impact on student retention. The other was a one-credit *Success In Math* course which had been recently piloted with a volunteer group of students. In addition, several of our faculty had experience teaching a one-credit course at University of Maryland on math study skills and math anxiety.

The series of interactive workshops that was developed addressed the following topics:

Time management and goal-setting;
Reading and understanding math;
Note-taking and study skill for math;
Math test-taking skills;
Math anxiety;
Using a Scientific Calculator;
Using a Graphing Calculator;
and Memory aids for math.

All involved a lot of student participation/group work.

During the spring 1996 semester, a different topic was offered each week. The participation by students was voluntary, but could be used to fulfill a portion of the lab requirement for their courses. Although attendance was not high, the students who came rated the experience as valuable.

Subsequently the faculty decided to require attendance at a core group of four workshops in the fall semester. Also it was decided to include a fall orientation program. The fall trial involved over six hundred students: all Monday-Wednesday-Friday arithmetic, pre-algebra, and first semester elementary algebra students. We immediately noticed that students were less disruptive in class. As the table below shows, pass rates also improved.

FALL PASS RATES FOR DVM		1993	1994	1995	1996	1997
DVM 001	MWF	47.5%	23%	33%	**41%**	**49.7%**
(arithmetic)	TTR	79.5%	47%	53%	67%	**41.8%**
	EVE	80.5%	56%	73%	57%	**63%**
DVM 003	MWF	44%	44%	34%	**53%**	**51.7%**
(pre-algebra)	TTR	64%	64%	42%	63%	**58.4%**
	EVE	58%	58%	65%	60%	**69.4%**
DVM 004	MWF	37.5%	37.5%	28%	**54%**	**53.7%**
(elementary	TTR	45%	45%	55%	54%	**53.7%**
algebra)	EVE	73.5%	73%	65%	51%	**69.2%**
DVM 005	MWF	50%	50%	54%	**60%**	**57%**
(self-paced)	TTR	61%	61%	54%	59%	**50.9%**
	EVE	67%	67%	72%	57%	**74.7%**

BOLD UNDERLINED: mandatory workshop program used

In spring of 1997 the workshops were again offered, but this time they were optional because most students were returning from the fall semester. Then in fall of 1997 the orientation and workshops were made mandatory for all developmental math students except those continuing with the second semester of elementary algebra. Students again rated these workshops very highly.

In spring of 1998 the workshops were incorporated into our arithmetic course. (Studies at University of Maryland suggest that such inclusion should be our goal.) We plan to allow greater flexibility to the evening students in choosing their workshops, but for daytime students the core workshops will remain mandatory. We also plan to include weekly workshops on problem-solving in the fall 1998 offerings.

Two other campus agencies, the vocational support services and the campus tutoring center are using the workshops with their own instructors for learning support of math students that they serve.

Design. The format for the first workshop, Time Management and Goal Setting, was so easy to use that we adopted it for all the rest. The instructor packet includes a workshop plan, with minute-by-minute descriptions of activities (below); an instructor supplement, with background reading for the instructor; overhead transparencies; a student handout; an evaluation form; and a follow-up activity form. Students were required to complete the follow-up activity and return it to their math instructors in order to gain credit for attendance.

TIME MANAGEMENT AND GOAL SETTING WORKSHOP

OBJECTIVE	ACTIVITIES	TIME
Identify time management problems	Students break into small groups of 3-4 to share time problems.	3 min.
Aids to Goals Setting	Lecture/discussion.	5-7 min.
Write out goals for math	Pair share; write 2 long term goals, 2 mid term goals, 2 short term goals related to math; need not share with group, but check for realistic.	5 min.
Check for realistic goals	See: Points to consider when setting a goal. Discussion.	5 min.
Begin a weekly planner.	On back of planner: write down all courses taking this semester. Next to each course, write down desired grade. Next, write down hours of study/week needed to get that grade. Check for realistic times using Rule of Thumb.	10-15 min.
Activities associated with studying	Show transparency.	2 min.
Explain follow-up activity	1. Determine 5 goals for the semester relating to math class. Think about things affecting math class performance. Turn in 1 copy to your instructor. 2. Complete weekly planner and try for 1 week. Submit planner to instructor.	5 min. (2 hours of lab time is credited for completed follow-up activities.)
Fill out workshop evaluation forms.	Hand out evaluation forms.	

Very little preparation was needed by first time workshop instructors. Afterwards many improvised and expanded the topics. As faculty began teaching these workshops they became experts at math study skills overnight and added to their methodologies.

Workshop instructors are paid using rates for substitute teaching. The entire fall workshop schedule (234 workshops) cost the college about $6500, including one hour of coordinator release time and cost of materials.

The developmental math fall orientation program is held at the beginning of the second week of classes. The program opens with a ten-minute video featuring successful developmental math students answering these questions: "What did you include in your study routine to achieve success?", "How did you schedule around the various demands on your time to accommodate your math work?", and "What advice would you give to a new student in developmental math?" The program schedule is as follows:

Success Video (10 minutes)
Welcome by former developmental math students (3 min.)
Dean: Student Responsibilities and Attitudes (5 min.)
Math Coordinator: Developmental and Credit Math Curriculum (3 min.)
Workshop Program and Scheduling (5 min)
Counselor: Support services (3 min.)
Tutor: Math tutoring services (3 min.)
Lab Coordinator: video and computer support, follow-up activity (3 min.)
Workshop scheduling forms collected as students leave.
(Total time: Approximately 40 min.)

Study skills workshops begin the third week.

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DON'T FORGET ALL THE RESIDENT EXPERTS AT YOUR INSTITUTION!

The project was a great experience all around. It brought together developmental math faculty and student affairs personnel in a collaborative effort. It broadened the faculty approaches to student learning. It promoted student success in mathematics.

Dr. Yvonne K. Seon, Educational Advisor for Vocational Support Services at Prince George's Community College, Largo, MD. Dr. Seon coordinates study skills workshops and presentations, including the annual SuccessNet learning fair on campus. She advises students individually on strategies for improving test-taking skills. She initially came to the college in 1993 as Interim Coordinator for Minority Student Retention. She has been in higher education since 1968.

Roxann King, Professor, Developmental Mathematics, Prince George's Community College, Largo, MD. Roxann King received her M.S. in mathematics and M.Ed. in secondary and two-year college mathematics from University of Florida in 1976 and 1973 respectively. She has been teaching developmental mathematics at Prince George's Community College since 1977.

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